

**APPARATUS HAVING PRECISION HYPERSPECTRAL IMAGING ARRAY  
WITH ACTIVE PHOTONIC EXCITATION TARGETING CAPABILITIES  
AND ASSOCIATED METHODS**

**Abstract of the Disclosure**

The Precision Hyperspectral Imaging Array with Active Photonic Excitation Targeting Capabilities (defined as "the instrument") provides a high performance spectral imaging capability and process for exploiting detailed multispectral, hyperspectral and ultraspectral (defined together within this document as "hyperspectral") imaging and non-imaging signature information. This is accomplished in real-time and/or near real-time in order to discriminate and identify the unique spectral characteristics of the target within its naturally occurring environment. The instrument contains one or more mechanically integrated hyperspectral sensors installed on a fixed or moveable hardware frame and co-boresighted with a similarly mounted digital camera, calibrated visible light source, calibrated thermal source and calibrated fluorescence source. The array moves across the target via mechanical means, and in doing so, simultaneously carries all necessary passive hyperspectral imaging sensors and active calibration sources to effect collection of absolute radiometrically corrected spectral data against the target at high spatial and spectral resolutions.